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(54) **LED BULB AND LAMP HEAD STRUCTURE**

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F21V 19/00	(2006.01)
F21K 99/00	(2010.01)
F21Y 101/02	(2006.01)
F21V 3/00	(2015.01)
F21V 23/00	(2015.01)
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CPC ***F21V 19/045*** (2013.01); ***F21K 9/1355*** (2013.01); ***F21V 19/004*** (2013.01); ***F21V 19/005*** (2013.01); *F21V 3/00* (2013.01); *F21V 23/006* (2013.01); *F21V 23/06* (2013.01); *F21Y 2101/02* (2013.01)

(58) **Field of Classification Search**

CPC H01R 33/94; H01R 33/22; H01R 2201/08

USPC 439/236, 611, 620.02

See application file for complete search history.

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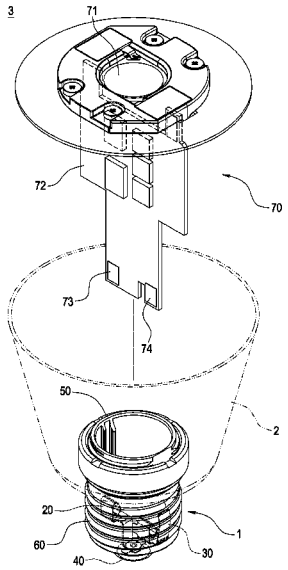
(57) **ABSTRACT**

The present invention provides an LED bulb and a lamp head structure hereof. The lamp head structure includes an insulating seat, a first conducting plate, a second conducting plate and a conducting piece. The insulating seat has a first accommodating space and a second accommodating space separately arranged and an opening slot communicating with the second accommodating space. The first conducting plate is accommodated in the first accommodating space. One end of the conducting piece inserted in the first conducting plate is electrically conducted with each other, and the other end is protruded out of the insulating seat. The insulating seats could be provided for different types of LED bulb. Thus the development time will be shortened, and the production cost will be reduced.

7 Claims, 7 Drawing Sheets



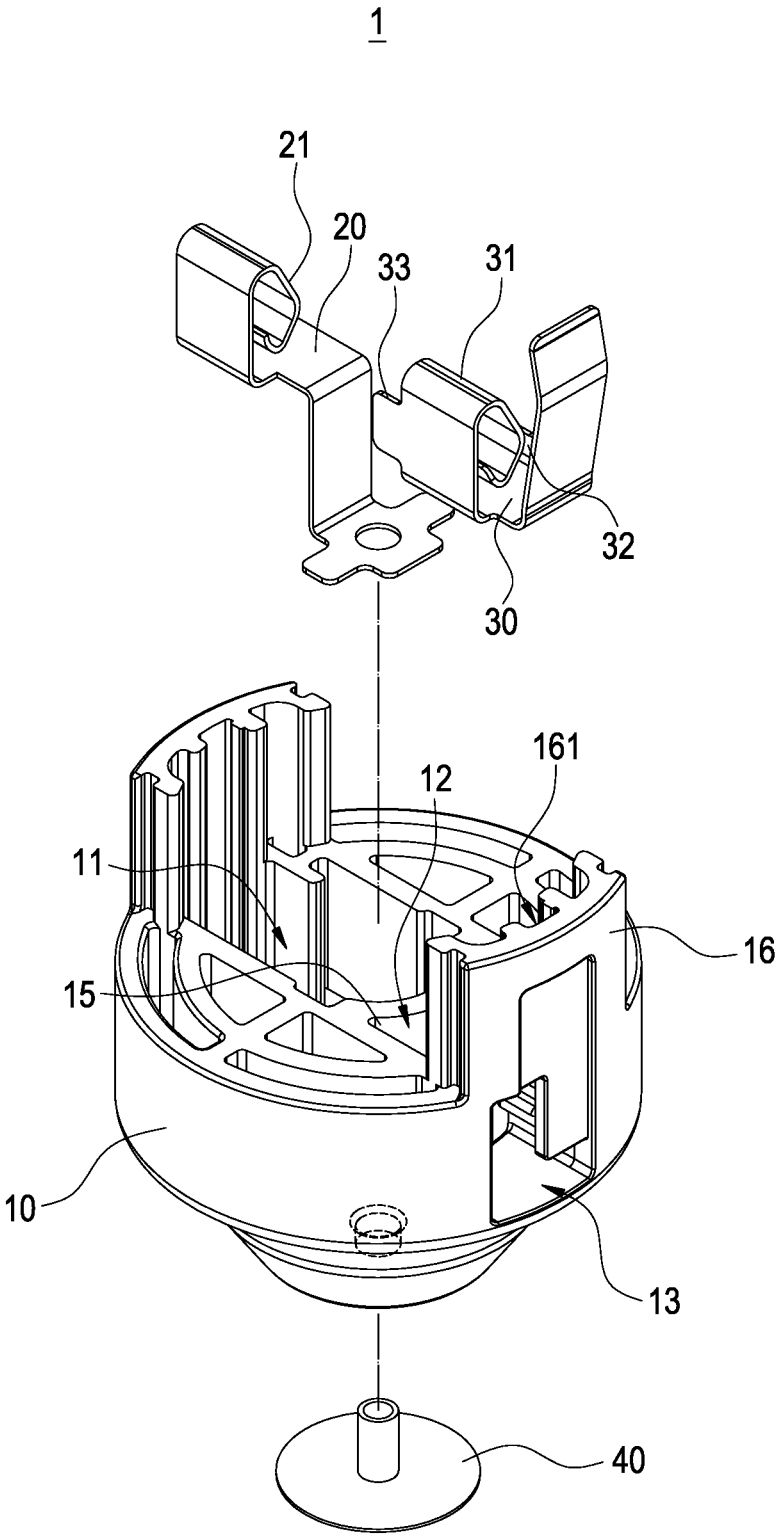


FIG.1

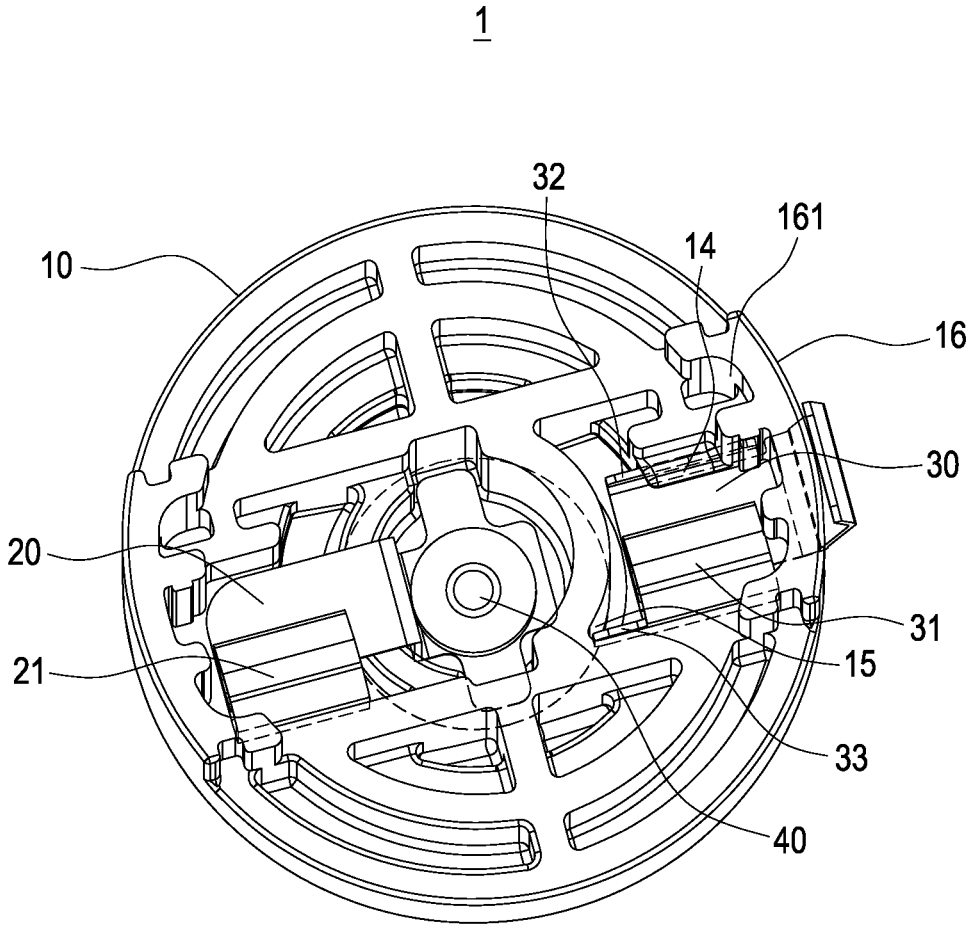


FIG.2

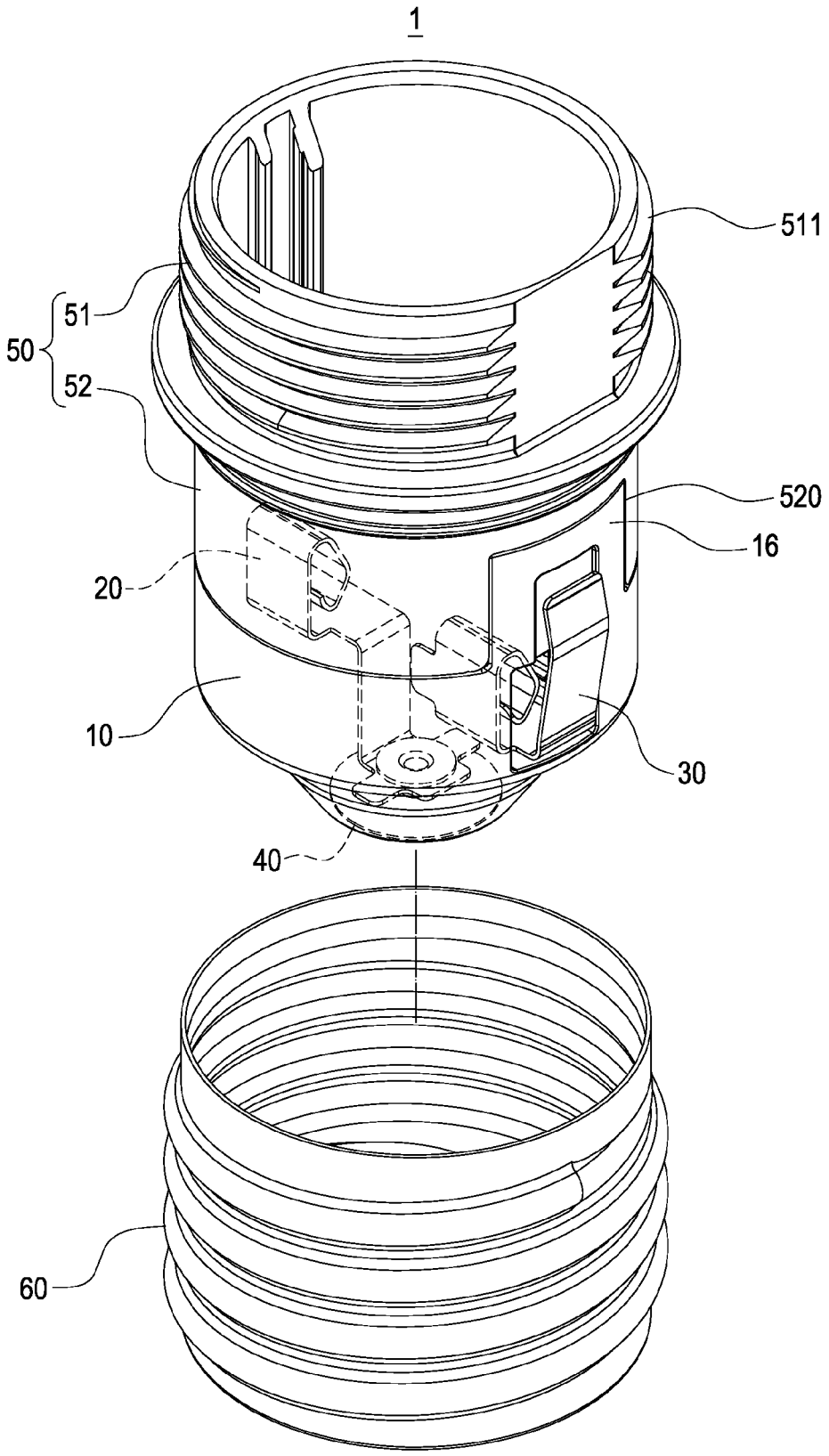


FIG.3

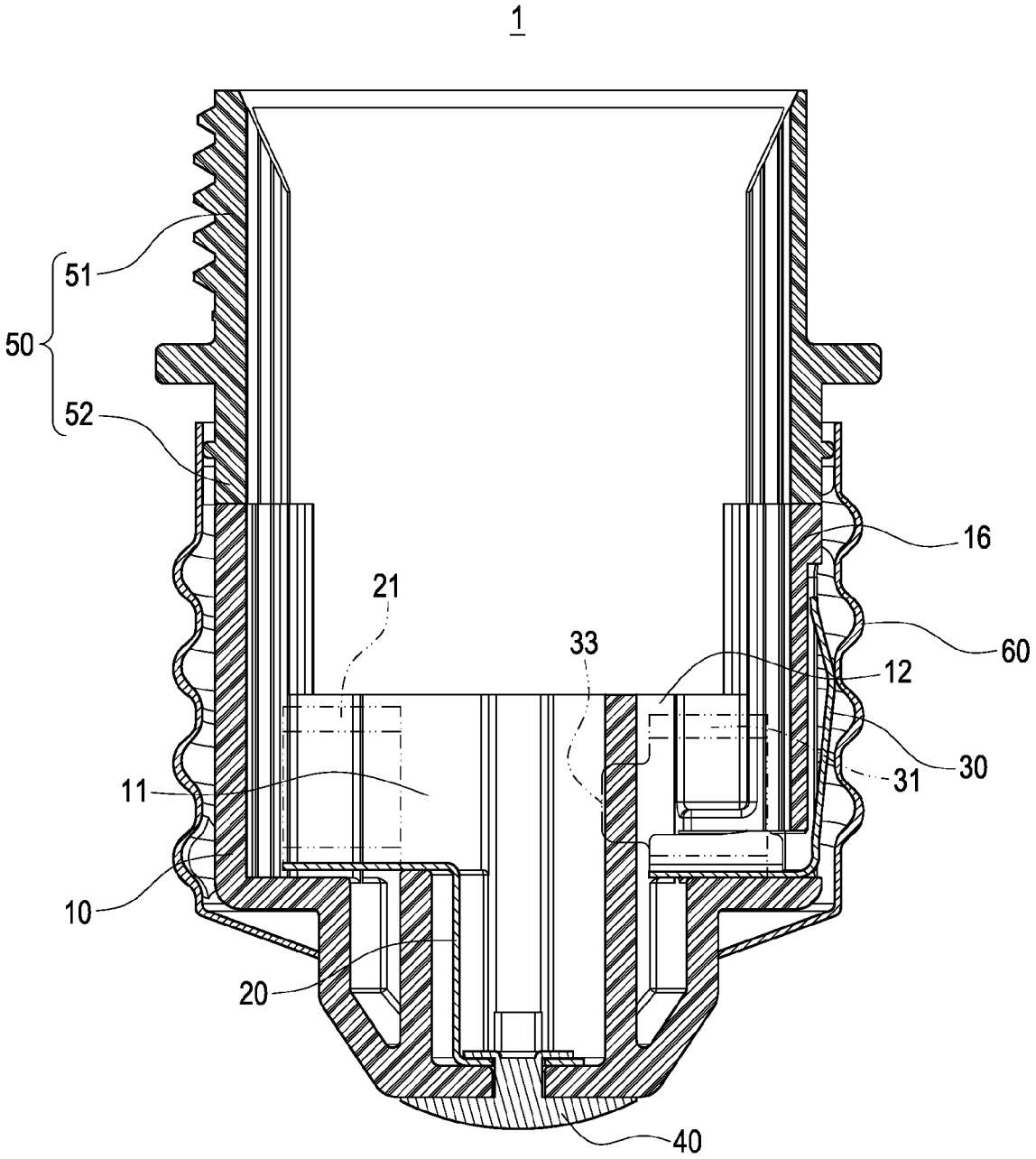


FIG.4

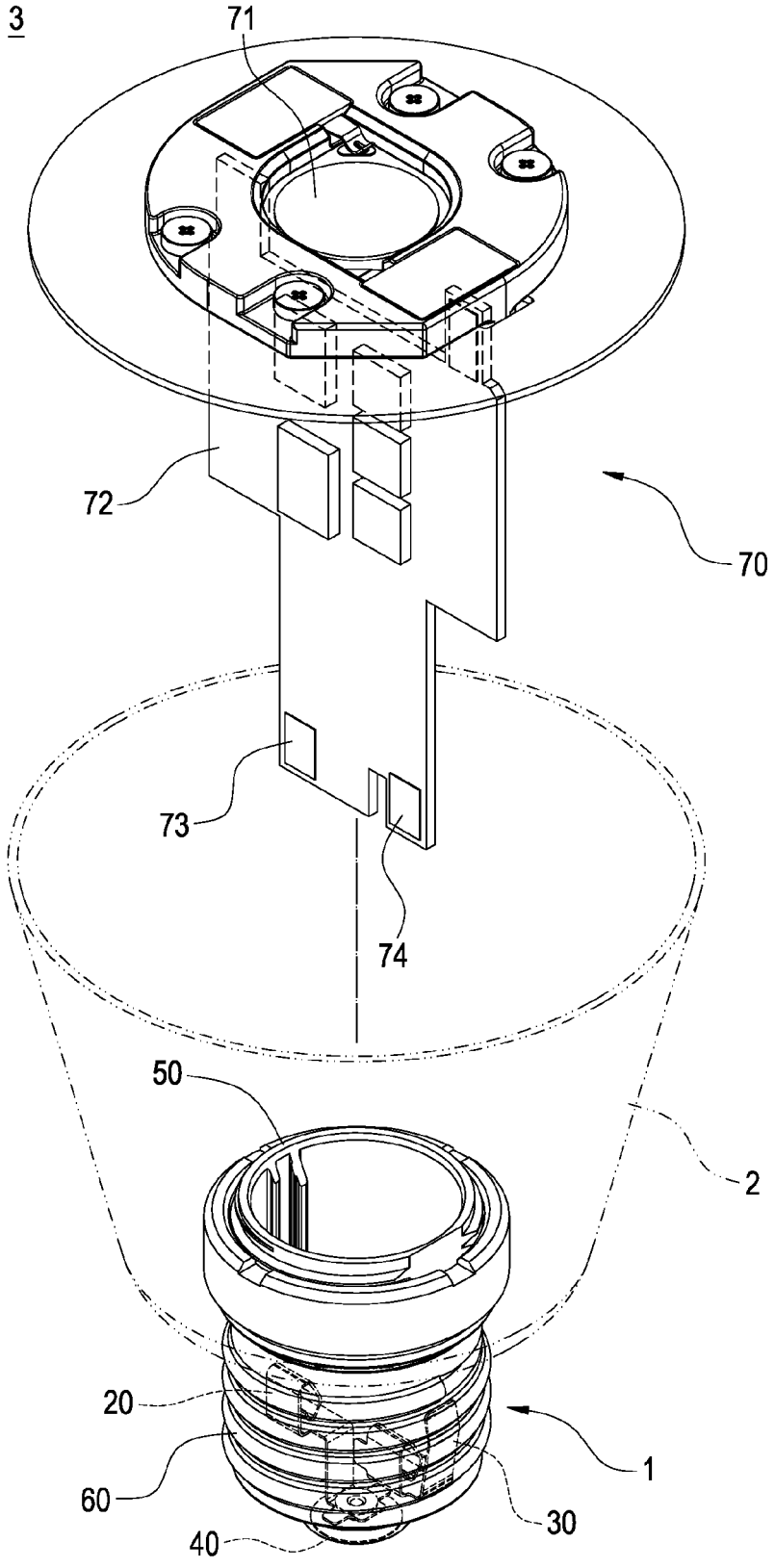


FIG.5

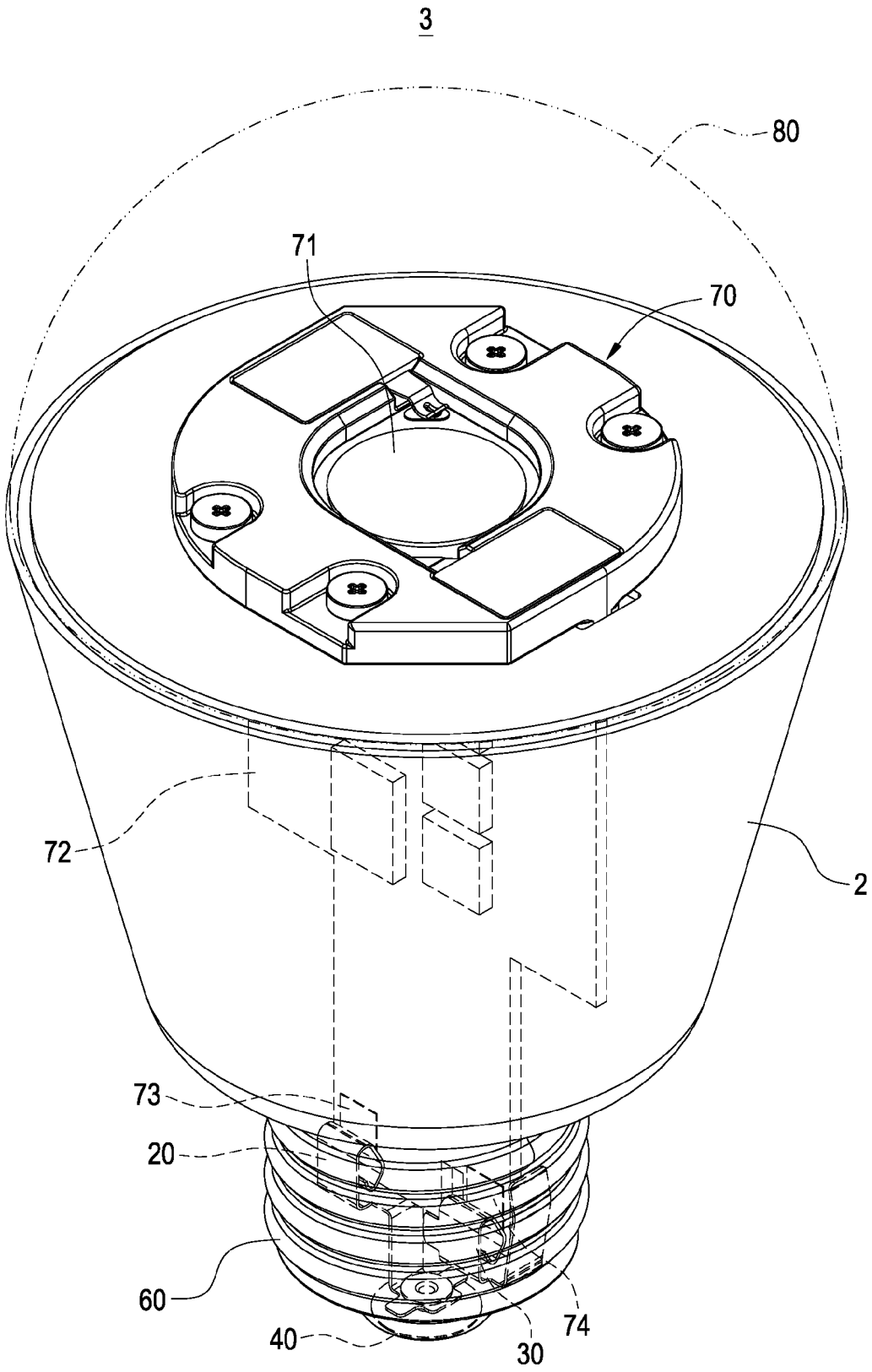


FIG.6

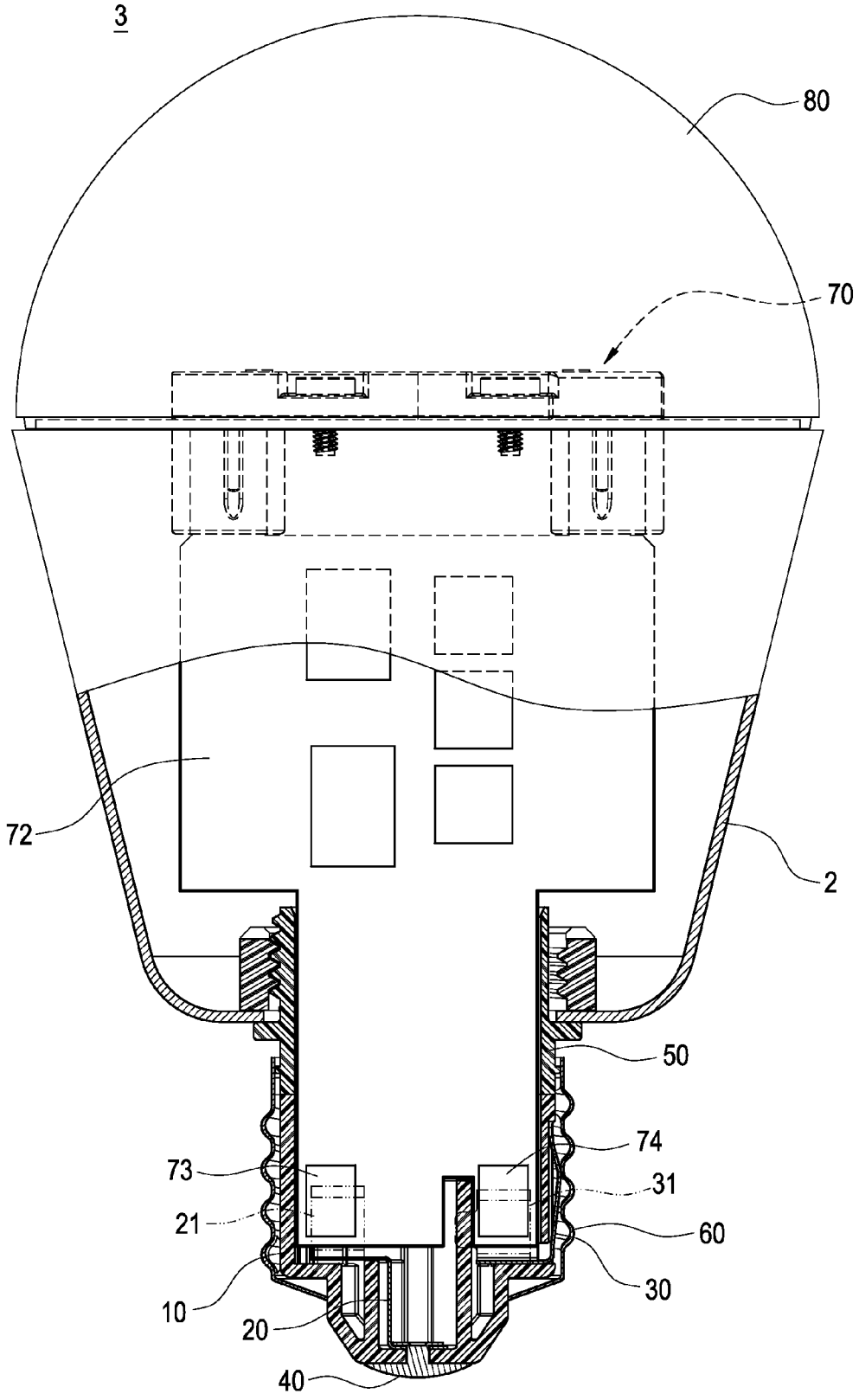


FIG.7

LED BULB AND LAMP HEAD STRUCTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention generally relates to a lamp head structure and, in particular to a lamp head assembly applied in an LED bulb.

2. Description of Related Art

Because LEDs have characteristics of quick response, small size and low pollution etc., LEDs gradually replace incandescent lamps for saving energy and protecting environment.

Commercially available LED bulb has a lamp base and a lamp head connecting with the lamp base. An LED assembly is disposed in the lamp base. A conducting threaded section and an electrical bump are provided on the lamp head. Moreover, two wires are accommodated in the lamp base. One end of one wire is soldered on the circuit board, and the other end is soldered on a conducting threaded section. Besides, one end of the other wire is soldered on the circuit board, and the other end is soldered on the electrical bump for configuring a circuit loop.

However, an electrically connection of the above LED bulb is achieved through a soldering process. According to the soldering process is complicated, the operating time and the assembly cost will be increased. Furthermore, because LED bulbs have a lot of models, lamp bases and lamp heads must have corresponding structures which result in a long development schedule.

In view of the above drawbacks, the Inventor proposes the present invention based on his expert knowledge and elaborate researches in order to solve the problems of related art.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to provide a lamp head structure, which the two conducting plates are disposed in the insulating seat, and the insulating seats could be provided for different types of LED bulb. Thus the development time will be shortened, and the production cost will be reduced.

In order to achieve the object mentioned above, the present invention provides a lamp head structure for combining with a lamp base. The lamp head structure comprises an insulating seat, a first conducting plate, a second conducting plate and a conducting piece. The insulating seat includes a first accommodating space and a second accommodating space separately arranged and an opening slot communicating with the second accommodating space. The first conducting plate is accommodated in the first accommodating space. One end of the first conducting plate is fixed in the insulating seat, and the other end is bent to form a first elastic arm. The second conducting plate is accommodated in the second accommodating space. One end of the second conducting plate is protruded out of the opening slot, and the other end is bent to form a second elastic arm. One end of the conducting piece inserted in the first conducting plate is electrically conducted with each other, and the other end is protruded out of the insulating seat.

Another object of the present invention is to provide an LED bulb, which the lamp head structure could be provided for different types of LED bulb, and an ease of the assembly will be achieved.

In order to achieve the object mentioned above, the present invention provides a lamp head structure, an insulating seat, a lighting module and a lamp shell. The lamp head structure

comprises an insulating seat, a first conducting plate, a second conducting plate and a conducting piece. The insulating seat includes a first accommodating space and a second accommodating space separately arranged and an opening slot communicating with the second accommodating space. The first conducting plate is accommodated in the first accommodating space. One end of the first conducting plate is fixed in the insulating seat, and the other end is bent to form a first elastic arm. The second conducting plate is accommodated in the second accommodating space. One end of the second conducting plate is protruded out of the opening slot, and the other end is bent to form a second elastic arm. One end of the conducting piece is inserted and electrically conducted with the first conducting plate, and the other end is protruded out of the insulating seat.

Comparing to the related art, the first conducting plate and the second conducting plate of the lamp head structure of the present invention are both disposed in the insulation seat. The lamp head structure can make design changes by different types of lamps. Thus the development time will be shortened, and the production cost will be reduced for enhancing the ease of the assembly.

BRIEF DESCRIPTION OF DRAWING

The features of the invention believed to be novel are set forth with particularity in the appended claims. The invention itself, however, may be best understood by reference to the following detailed description of the invention, which describes a number of exemplary embodiments of the invention, taken in conjunction with the accompanying drawings, in which:

FIG. **1** is a perspective explosion schematic view of lamp head structure of the present invention;

FIG. **2** is a perspective schematic view of lamp head structure of the present invention;

FIG. **3** is another perspective schematic view of lamp head structure of the present invention;

FIG. **4** is an assembly cross sectional views of another side of lamp head structure of the present invention;

FIG. **5** is a partial explosion view of an LED lamp of the present invention;

FIG. **6** is a perspective schematic view of an LED lamp of the present invention;

FIG. **7** is an assembly cross sectional view of an LED lamp of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In cooperation with attached drawings, the technical contents and detailed description of the invention are described thereinafter according to a number of preferable embodiments, being not used to limit its executing scope. Any equivalent variation and modification made according to appended claims is all covered by the claims claimed by the present invention.

Please refer to FIG. **1** and FIG. **2**, they depict a perspective explosion schematic view and a perspective schematic view of lamp head structure of the present invention. The lamp head structure **1** includes an insulating seat **10**, a first conducting plate **20**, a second conducting plate **30** and a conducting piece **40**. The first conducting plate **20** and the second conducting plate **30** are separately disposed in the insulating seat **10**.

The insulating seat **10** includes a first accommodating space **11** and a second accommodating space **12** separately

arranged and an opening slot **13** communicating with the second accommodating space **12**. Moreover, the first conducting plate **20** is accommodated in the first accommodating space **11**. One end of the first conducting plate **20** is fixed in the in the bottom of the insulating seat **10** inside, and the other end is bent to form a first elastic arm **21**. Besides, the second conducting plate **30** is accommodated in the second accommodating space **12**. One end of the second conducting plate **30** is protruded out of the opening slot **13**, and the other end is bent to form a second elastic arm **31**.

The conducting piece **40** could be, but not limited to, a rivet. One end of the conducting piece **40** is inserted in the first conducting plate **20**. The conducting piece **40** is electrically conducted with the first conducting plate **20**, and the other end of the conducting piece **40** is protruded out of the insulating seat **10** for electrically connection.

The insulating seat **10** is provided with a hook **14** in a side of the second accommodating space **12**. One side of the second conducting plate **30** is formed with a buckle **32**, and the hook **14** is latched on the buckle **32**. Furthermore, the insulating seat **10** has a notch **15** in another side of the second accommodating space **12**. One side of the second conducting plate **30** is formed with a bump **33**, and the bump **33** is stuck in the notch **15**.

The first conducting plate **20** is combined in the insulating seat **10** through the conducting piece **40**. On the other hand, the second conducting plate **30** is combined in the insulating seat **10** through the hook **14** of the insulating seat **10** snapping with the buckle **32** of the second conducting plate **30**.

Please also refer to FIG. **3** and FIG. **4**, they depict another perspective schematic view and an assembly cross sectional view of lamp head structure of the present invention. In the present invention, the lamp head structure **1** further includes a supporting barrel **50** and a conducting ring **60**. The supporting barrel **50** has a receiving section **51** and an assembling section **52** connected with the insulating seat **10**. The assembling section **52** is extended from the receiving section **51**, and a plural of threads **511** are provided on an outer surface of the receiving section **51**. An outer surface of the conducting ring **60** is configured in a wave shape, and the conducting ring **60** is sleeved on the insulating seat **10** and conducted with the second conducting plate **30**.

In an embodiment of the present invention, an end of the insulating seat **10** is formed with at least one inserting plate **16**. The assembling section **52** has an inserting slot **520** corresponding to the inserting plate **16**, and the supporting barrel **50** is assembled on the insulating seat **10** through a positioning of the inserting slot **520** and the inserting plate **16**.

With referring to FIG. **5** to FIG. **7**, they depict a partial perspective explosion schematic view, a perspective schematic view and an assembly cross sectional view of an LED bulb of the present invention. The lamp head structure **1** is applied to combine with a lamp base **2** for constituting an LED bulb **3**.

In an embodiment of the present invention, the LED bulb **3** comprises a lamp head structure **1**, a lamp base **2**, a lighting module **70** and a lamp shell **80**. The lamp head structure **1** includes an insulating seat **10**, a first conducting plate **20**, a second conducting plate **30**, a conducting piece **40** and a supporting barrel **50**.

The lamp base **2** assembled on the supporting barrel **50** could be provided as a heat sink, and the lighting module **70** is disposed in the lamp base **2**.

The lighting module **70** includes an LED assembly **71**, a circuit board **72** electrically connected with the LED assembly **71** and a first conducting pad **73** and a second conducting pad **74** provided on the circuit board **72**. The lamp shell **80** is a transparent shell, and the lamp shell **80** is disposed on the lamp base **2** for covering the LED assembly **71**.

In the present embodiment, an inner surface of the inserting plate **16** of the insulating seat **10** is formed with a plural of grooves **161** (refer to FIG. **1**), and two lateral sides of the circuit board **72** are inserted in the grooves **161**. The first conducting pad **73** of the circuit board **72** is electrically connected with the first elastic arm **31** of the first conducting plate **20**, and the second conducting pad **74** is electrically connected with the second elastic arm **31** of the second conducting plate **30**. Thus the circuit board **72** is assembled in the lamp base **2** for achieving the electricity connection without a soldering process.

Although the present invention has been described with reference to the preferred embodiment thereof, it will be understood that the invention is not limited to the details thereof. Various substitutions and improvements have been suggested in the foregoing description, and others will occur to those of ordinary skill in the art. Therefore, all such substitutions and improvements are intended to be embraced within the scope of the invention as defined in the appended claims.

What is claimed is:

1. A lamp head structure for combining with a lamp base, the lamp head structure comprising:

an insulating seat including a first accommodating space and a second accommodating space separately arranged and an opening slot communicating with the second accommodating space, wherein two inserting plates are protruded out of a top end of the insulating seat to form a partial periphery wall;

a first conducting plate accommodated in the first accommodating space, one end of the first conducting plate fixed in the insulating seat and the other end being bent to form a first elastic arm;

a second conducting plate accommodated in the second accommodating space, one end of the second conducting plate protruded out of the opening slot and the other end being bent to form a second elastic arm;

a conducting piece having one end inserted and electrically conducted the first conducting plate and the other end protruded out of the insulating seat; and

a supporting barrel having a receiving section connected with the lamp base, an assembling section connected with the insulating seat, and a flange formed between the receiving section and the assembling section, wherein a plural of threads are provided on an outer surface of the receiving section, the assembling section has two inserting slots corresponding to the two inserting plates, respectively, and the supporting barrel is assembled on the insulating seat through a positioning of the inserting slot and the inserting plate.

2. The lamp head structure according to claim **1**, wherein the insulating seat is provided with a hook in a side of the second accommodating space, one side of the second conducting plate is formed with a buckle, the hook is latched on the buckle.

3. The lamp head structure according to claim **1**, wherein the insulating seat having a notch in another side of the second accommodating space, one side of the second conducting plate is formed with a bump stuck in the notch.

4. The lamp head structure according to claim **1**, wherein the conducting piece is a rivet with a head disposed on an outer surface of a bottom end of the insulating seat and a tail holding the one end of the first conducting plate on an inner surface of the bottom end of the insulating seat.

5. The lamp head structure according to claim 1, further including a conducting ring, the conducting ring is sleeved on the insulating seat and conducted with the second conducting plate.

6. An LED bulb, comprising:

a lamp head structure, including:

an insulating seat including a first accommodating space and a second accommodating space separately arranged and an opening slot communicating with the second accommodating space, wherein two inserting plates are protruded out of a top end of the insulating seat of the insulating seat to form a partial periphery wall;

a first conducting plate fixed in the first accommodating space;

a second conducting plate fixed in the second accommodating space;

a conducting piece having one end inserted and electrically conducted the first conducting plate and the other end protruded out of the insulating seat; and

a supporting barrel having a receiving section connected with the lamp base, an assembling section connected with the insulating seat, and a flange formed between the receiving section and the assembling section, wherein a plural of threads are provided on an outer surface of the receiving section, the assembling section has two inserting slots corresponding to the two inserting plates, respectively, and the supporting barrel is assembled on the insulating seat through a positioning of the inserting slot and the inserting plate;

a lamp base assembled on the supporting barrel;

a lighting module disposed in the lamp base, the lighting module including an LED assembly, a circuit board electrically connected with the LED assembly and a first conducting pad and a second conducting pad provided on the circuit board, the first conducting pad is electrically connected with the first conducting plate, and the second conducting pad is electrically connected with the second conducting plate; and

a lamp shell disposed on the lamp base for covering the LED assembly.

7. The LED bulb according to claim 6, wherein an inner surface of the inserting plate is formed with a plural of grooves, and two lateral sides of the circuit board are inserted in the grooves.

* * * * *